

WHAT IS CLAIMED IS:

1. A device for use in cooling a microelectronic component in a data processing system with a heat sink and a fan, comprising:

means for maintaining the fan in close proximity to the heat sink and in a position relative to the fan for moving air over the cooling surfaces of the heat sink; and

a component to vibrationally isolate the fan from the heat sink and reduce the transmission of fan vibration to the heat sink.

2. The device of claim 1, wherein the vibration isolation component is configured to receive the fan and secure the fan in position relative to the heat sink to locate the fan in a predetermined position relative to the heat sink.

3. The device of claim 2, wherein the vibration isolation component is further characterized as a solid elastomeric vibration isolation component.

4. The device of claim 2, wherein the vibration isolation component is further characterized as a foam elastomeric vibration isolation component.

5. The device of claim 2, wherein the vibration isolation component comprises:

a metal element to support the fan and attach to the heat sink;

a solid elastomeric element affixed to the fan; and

a foam elastomeric element affixed to sections of the metal element attached to the heat sink, thereby vibrationally isolating the metal element sections.

6. The device of claim 2, wherein the vibration isolation component comprises

a metal element to support the fan and attach to the heat sink;

5 a first foam elastomeric element configured to receive and secure the fan in position relative to the heat sink, and having sufficient resistance to thermal degradation in damping coefficient, modulus of elasticity, and strength to maintain the integrity of the heat sink/fan assembly at operating temperatures;

10 additional foam elastomeric elements affixed to sections of the metal element attached to the heat sink to vibrationally isolating the sections of the metal element which affix to the heat sink.

15 7. The device of claim 1, wherein the vibration isolation component comprises a compliant gasket defining an opening adapted to receive an active area of the fan to allow air flow generated by the fan to reach the heat sink.

20 8. The device of claim 7 wherein the means for maintaining the heat sink in proximity to the fan is further characterized as a fan shroud configured to attach to the heat sink and including a surface defining an opening adapted to the size and geometry of the active area of the fan, allowing airflow from the fan to reach the heat sink, and wherein an adhesive material adheres the compliant gasket vibration isolation component to the fan on one surface and the fan shroud on an opposing surface.

25 9. The device of claim 7 in which the compliant gasket is a molded solid elastomer.

10. The device of claim 7 in which the compliant gasket is a molded foam elastomer.

30 11. An assembly for use in cooling a microelectronic component in a data processing system, comprising:

a heat sink and a blower fan;

means for maintaining the fan in close proximity to the heat sink and in a position relative to the fan for moving air over the cooling surfaces of the heat sink; and

5 a component to vibrationally isolate the fan from the heat sink and reduce the transmission of fan vibration to the heat sink.

12. The assembly of claim 11, wherein the vibration isolation component comprises a compliant gasket defining an opening of the size and geometry of the active area of the fan, and further
10 wherein the means for maintaining the fan in proximity to the heat sink comprises a fan shroud attachable to the heat sink and providing a surface defining an opening of the size and geometry of the active area of the fan thereby allowing airflow from the fan to reach the heat sink and wherein an adhesive material adheres the a first surface of the compliant gasket to the fan and an opposing surface to the fan shroud.

15 13. The assembly of claim 12 in which the compliant gasket is a molded solid elastomer.

14. The assembly of claim 12 in which the compliant gasket is a molded foam elastomer.

20 15. The assembly of claim 11, wherein the vibration isolation component is integrated with the means for maintaining the fan in proximity to the heat sink and configured to receive the fan and secure the fan in position relative to the heat sink to locate the fan in a predetermined position relative to the heat sink.

25 16. The device of claim 15, wherein the vibration isolation component is further characterized as a solid elastomeric vibration isolation component.

17. The device of claim 15, wherein the vibration isolation component is further characterized as a foam elastomeric vibration isolation component.

18. An apparatus for use in conjunction with dissipating heat generated by an integrated circuit with a heat sink and a fan, comprising an vibration isolation component integrated with a fan shroud component wherein the fan shroud attaches the fan to the heat sink and wherein the vibration isolation component is disposed between the fan and the heat sink and wherein the isolation component is configured to reduce the transmission of fan vibration to the heat sink.

19. The apparatus of claim 19, wherein the fan shroud includes a carrier structure defining a cavity sized to the receive the fan wherein a base of the carrier structure provides the vibration isolation element and defines an opening the size of an active area of the fan.

20. The apparatus of claim 19, further comprising legs and cross-bands connecting opposing pairs of legs, the legs extending from the base and having a length approximately the height of the heat sink wherein the cross-bands and legs are configured to surround a perimeter of the heat sink.